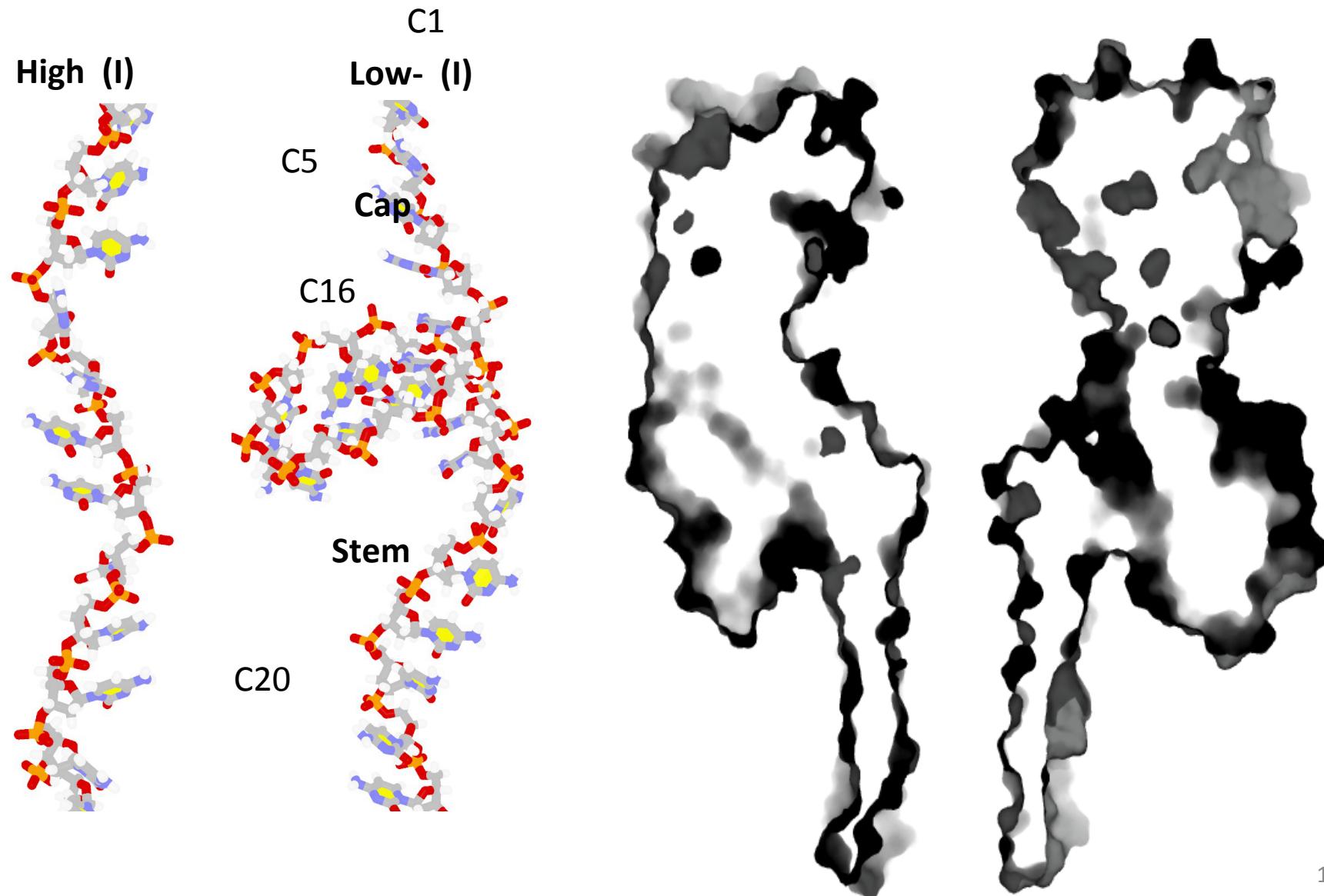
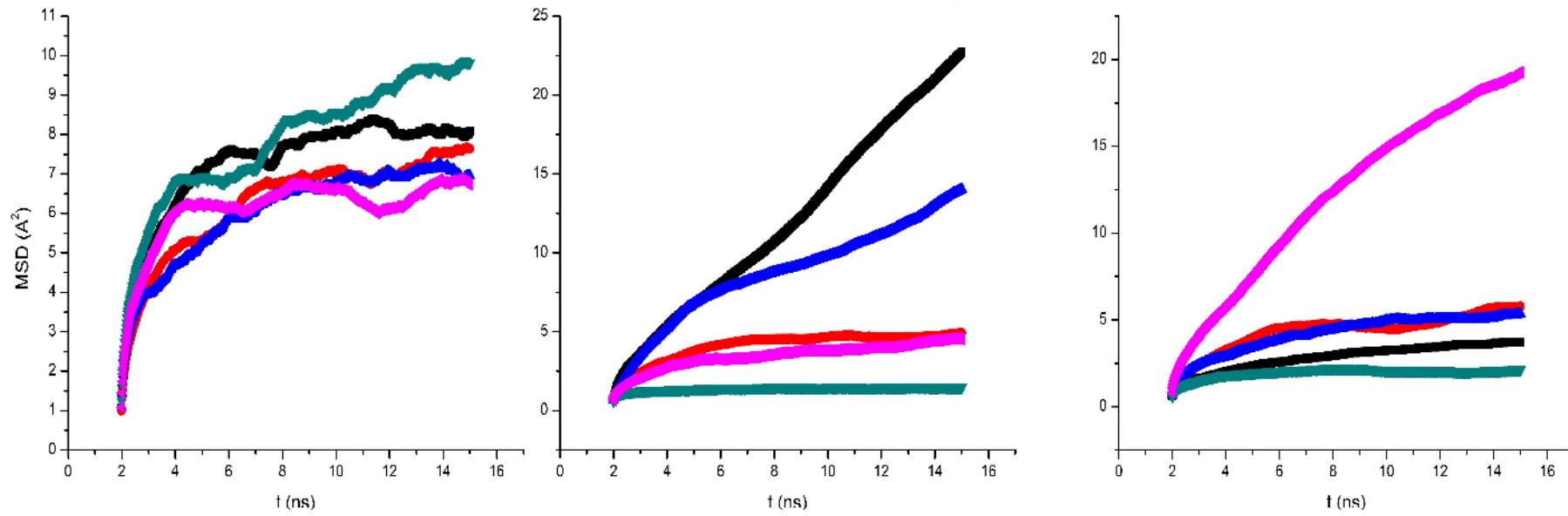


**Figure S1** Representative structures for shallow (left) and deep- (right) blocking conformations of ssDNA and its relative proximity to the hemolysin pore



**FIGURE S2:** Time series of the mean square displacement (MSD) for tandems of nucleotides confined in the protein cap (left), first sensing (E111-K147, center) and second sensing zones (N121-N129, right), for five independent MD simulations with  $V=600$  mV and a 1M concentration of KCl.



**FIGURE S3:** The water dipole orientation along the Z-axis from 200 ns equilibrium MD simulations for truncated system with poly(dC)<sub>20</sub> captured in the pore.

